THE EFFECTS OF CRIMINAL VIOLENCE ON EXECUTIVE APPROVAL: AGGREGATE- AND INDIVIDUAL-LEVEL ANALYSES OF PUBLIC OPINION IN MEXICO

Luigi Antonio Mendez

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Approved by:

Evelyne Huber

Gary Marks

Cecilia Martinez-Gallardo

ABSTRACT

Luigi Antonio Mendez. The Effects of Criminal Violence on Executive Approval: Aggregate- and Individual-Level Analyses of Public Opinion in Mexico
(Under the direction of Cecilia Martínez-Gallardo)

How does criminal violence affect how citizens evaluate the president? Through aggregate- and individual-level analyses of public opinion surveys in Mexico I find that criminal violence has a negative effect on approval. Moreover, I find that this effect is mediated by two intervening variables: the state of the economy and the spatial distribution of crime. Aggregate-level data shows that the negative effect of crime on approval is stronger when inflation and unemployment are low, as crime diverts attention from economic indicators when the economy is doing well. Meanwhile, individual-level data highlights significant spatial heterogeneity within the public when it comes to the salience of public security in their evaluations of the president. The findings for Mexico in 2007 and 2008 suggest that individuals in high violence regions will weigh perceived executive performance on security more heavily in their overall assessment of the president.

To my family in Venezuela.
For their love, their support, and their resilience.

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INTRODUCTION

What are the political implications of an increase in criminal violence? Are the effects of public security on approval contingent on specific economic conditions? How does the uneven spread of violence among regions mediate these effects? In what ways do aggregate- and individual-level public opinion studies help us understand these dynamics? Inspired by John Mueller's (1970, 1973) seminal efforts to understand variations in presidential approval, political scientists have developed many new theories and methods to examine approval trends within and across administrations. When studying approval, however, most of the research has focused on economic and foreign policy variables—the "two pillars" of approval (Gronke and Newman 2003:508)—and most of this work has been on developed countries. There is also little work that bridges individual and aggregate models of approval. This thesis addresses some of these gaps in the literature by examining both micro- and macro-level models of executive approval in Mexico.

Evidence suggests that non-economic issues such as foreign policy, public security and corruption can matter as much to the public as the economy in evaluating their presidents (Fiorina 1981; Aldrich, Sullivan and Borgida 1989; Wilcox and Allsop 1991; Edwards 2005; Aldrich et al. 2006).[1] These issues can also reduce the salience of the economy in voters' evaluations of government performance (Singer 2011; Zechmeister and Zizumbo-Colunga 2013). Accordingly, studies have found that the most important factor that guides the weight

[1]Fiorina (1981:5) notes that in order to estimate their incumbent's performance, "citizens need only calculate the changes in their own welfare. If jobs have been lost in a recession, something is wrong. If sons have died in foreign rice paddies, something is wrong If polluters foul food, water, or air, something is wrong."

individuals give to issues is the degree to which they consider the issue as being personally important (Aldrich and McKelvy 1977; Bizer and Krosnick 2001; Bizer et al. 2004; in Singer 201:286). Given that in contexts of high violence—such as in Mexico—public security is likely to be salient for the public, we would expect that crime can become an important non-economic issue for voters.

The effects of criminal violence on stability, quality of life and economic development require us to expand our understanding of how citizens hold elected officials accountable on the issue of security.[2] This work supports the claim that criminal violence matters in presidential approval. However, I argue that the relationship between crime and approval is mediated by the shape of the economy and by the spatial distribution of crime. More specifically, I make two main claims. First, through an analysis of aggregate-level public opinion data in Mexico level I show that although violence has a negative effect on approval, this effect is mediated by the state of the economy at a given time. Assuming that in good economic times citizens are more likely to shift their attention to non-economic issues, I expect rising criminal violence to divert attention from economic indicators when the economy is doing well.

Second, through an individual-level analysis I show that the effects of crime on approval are mediated by the spatial distribution of crime. I consult official data from the National Institute of Statistics and Geography (INEGI, in Spanish) in Mexico to score states according to their level of criminal violence, and use survey data (BIIACS 2007, 2008) to show that perceptions of public security have a significant effect on approval. I argue that

[2]Accountability in this sense is broadly defined as people's capacity to reward or punish elected officials (Johnson and Schwindt-Bayer 2009; Carlin, Martínez-Gallardo and Hartlyn 2012:204).

citizens in high-violence states are likely to evaluate the president by weighing her work on security more heavily than other citizens. Conversely, individuals in low-violence states will pay less attention to the president's performance on security when it comes to approval.

This essay is organized as follows: Part 1 explores the relationship between crime and approval in Mexico at the macro- and micro-levels. In section 1.a. I argue that criminal violence should matter for approval given the salience of this issue in countries such as Mexico. In section 1.b. and 1.c. I study the effects of the two intervening variables of interest—the state of the economy and the spatial distribution of crime—on the relationship between crime and approval. Section 1.b. evaluates the effect of unemployment and inflation as intervening variables at the aggregate level; while section 1.c. examines the effect of the intervening variable regional violence using individual-level data. Part 2 provides information on the operationalization of variables used in the analysis, as well as details on data access, coding decisions and statistical models. In Part 3, I discuss my results and examine the main theoretical implications of these findings, and Part 4 concludes.

PART 1: THE EFFECTS OF CRIMINAL VIOLENCE ON APPROVAL

1.a. Executive approval and public security

There is extensive research that demonstrates a positive relationship between approval and the state of the economy: in general people expect presidents to produce favorable economic conditions, and they punish those who fail to do this.[3] Yet, we do not know much how these indicators interact with other key determinants of interest (Carlin et al. 2014a). There is also little research on the effect of issues surrounding public security, such as crime and natural disasters, on public evaluations of the president.

There are many reasons why crime would be a salient issue for individuals. In the liberal sense, as envisioned by Locke, the main responsibilities of the state are to protect the life, liberty, and property of its subjects (Hobbs and Hamerton 2014:28; Ley 2014:69). Given the state's normative duties and resources available to fulfill them, security is considered among its most basic functions. Crime also has tangible consequences that make it an accessible issue in people's minds (Ley 2014:68-9).[4] Just like the economy, insecurity affects people's prospects of survival and a comfortable life. And even if the consequences are not tangible to all, we would expect individuals to magnify negative events when it comes to crime, given that highly valued assets are at stake. For instance, evidence suggests that

[3]Approval ratings measure the percentage of the public that approves of the way politicians handle their jobs. These ratings serve as guidelines for parties to understand what constituents are thinking about and how they might vote (Berlemann and Enkelmann 2014).

[4]Originally, "salience" is used by scholars of voting behavior to designate the importance individual voters attach to different issues when evaluating political candidates (e.g., Berelson et al. 1954; in Wleizen 2005:556). In this sense, greater salience means greater importance.

humans tend to distort objective probabilities of being victims of a criminal act upwards (Bazerman 2002), and to overstate the incidence of low probability crimes (Magaloni et al. 2013:10).[5]

Even though security issues only directly affect a small proportion of the population, many more citizens are affected indirectly by violence. Criminal violence has tangible effects on economic development, human capital and people's quality of life (Prillaman 2003; World Bank 2011; Robles, Magaloni and Calderon 2013). Crime hampers economic growth from the victims' lost wages and labor, by polluting the investment climate, by hurting businesses, and by directing scarce government resources to strengthen law enforcement rather than promote economic growth (World Bank 2011:4).[6] The indirect effects of crime are also mediated by the news media[7] (Potter 1999; Romer et al. 2003) and by political predispositions such as partisanship or ideology (Popkin 1994; Erikson 2009).[8]

Violence also weakens key democratic institutions, decreases trust in the criminal justice system and the rule of law, and induces public fear (World Bank 2011; Ley 2014). Bermeo (1999) argues that high crime is a key determinant that drives voters to support *mano dura* ("iron fist") leaders whose policies often contribute to democratic backsliding.[9] In Latin

[5]As Magaloni et al. (2013:11) note, for example, people tend to overstate their "objective" probabilities of being victims of terrorism or being caught in crossfire between drug gangs (e.g., May et al. 2011).

[6]A 2009 study by Alaimo et al. (in World Bank 2011), for example, finds that businesses hit by crime have significantly lower sales per worker than those unaffected by criminal activity.

[7]The media heightens public concern for crime as it tends to sensationalize it and saturate viewers with crime news (Romer et al. 2003; Krause, 2014; 2017:4; see also Ley 2014, Ch. 4).

[8]Scholars have noted that security is used readily as a campaign theme, whether driven by actual crime (Wilson 1975), by voters' fear of crime affecting them (Scheingold 1984), or by their concerns about crime as a problem (Garland 2001; Godoy 2006). Security issues are used even where crime is low (Cullen et al. 1985; Davey 1999). Voters demand security (Marion and Farmer 2003), and candidates uncover these demands through polls (Angell et al. 1996) and public demonstrations about crime (Jimeno 2001; Erikson 2005). Such exposure primes voters' concerns about insecurity (Altheide 2002, in Ley 2017:4; Uang 2013:28).

[9]Bermeo's (1999) shows that those countries with homicide rates averaging 7 per 100,000 inhabitants or above experienced some type of backsliding.

America, this trend is evident through the strengthening of iron fist practices in several governments, as was the case during the governments of Alfonso Portillo and Felipe Calderon in Mexico (Seligson 2005:227; Gomez Vilchis 2013:34; Ley 2014).

Given that providing security is among the most basic state functions, that crime has tangible consequences for the economy and the lives of citizens, and that in contexts of high violence, security issues are consistently emphasized in the public discourse, I expect that:

- Hypothesis 1: on average, an increase in criminal violence will have a negative and statistically significant effect on the approval of a given president

This expectation makes sense in the context of Latin America, where crime has made public security the most significant concern of voters throughout the region (LAPOP 2008, 2014; Uang 2013). Unlike democracies in the developed world, Latin American countries are not characterized by small and diffuse criminal groups outside the state. Rather, violence is largely produced by organized criminal groups that often operate in collusion with the government (Snyder and Duran-Martínez 2009; Ley 2014; Trejo and Ley 2016; Ley 2017).[10]

The relationship between public security and approval, however, is not straightforward. Research has noted that responsibility on security issues tends to be distributed among different levels of government, and that it traditionally falls in the realm of local politics (Romero et al. 2016:103). In Latin American politics, however, the strength of the president makes the study of approval even more relevant, as the president is frequently a "focal-point of politics" (Zechmeister and Zizumbo-Colunga 2013).[11] In the case of Mexico,

[10]Organized criminal groups are informal associations that operate by illegal means with the primary goal of economic gain. Their illegal activities include drug trafficking, smuggling of illegal immigrants, human trafficking, arms trafficking, money laundering, extortion, and kidnapping (Ley 2014:14).

[11]Scholars have noted that public discontent over presidential performance has even led to occasional early departures of presidents in the region (Valenzuela 2004, Perez-Liñán 2007)

we know that when insecurity intensifies, the issue tends to escalate to the president's realm (Romero et al. 2016:103). As with foreign policy, terrorism, and war, outcomes with regards to public security tend to be viewed by citizens as belonging to the domain of the executive (Carlin et al. 2014a; Romero et al. 2016). In general, the public is more likely to hold the president responsible for security outcomes (Carlin et al. 2014a:443).

1.b. Crime, the economy, and approval

Research in the American and comparative politics subfields has shown that the economy is consistently one of the most important factors in public assessments of the president (Erikson et al. 2012; Carlin and Hunt 2015). Recessions—such as the one in Mexico in 2009—lead to greater coverage of the economy in the news as well as to greater public attention to the topic (Harrington 1989; Soroka 2006; Singer 2011). Increased media coverage by the media also increases the connection between economic fluctuations and presidential approval (Singer 2011:288).

However, many scholars have noted that in order to analyze the impact of economic conditions on approval we must take into account features of the political, institutional and social context (Pacek and Radcliff 1995; Palmer and Whitten 1999; Anderson 2000, 2007).[12] The economic voting literature suggests that people will pay less attention to the economy when other issues strongly compete for their attention (Singer 2011:290). Meanwhile, governance crises involving corruption or terrorist attacks may become more important in citizens' minds than domestic issues (Aldrich et al. 2006).[13] However, these crises might also become more or less important for the electorate depending on the state of the economy.

[12]We may also expect that the economic context should matter when studying the impact of crime on approval.

[13]As Singer (2011:290) notes: "Overlooked in the economic voting literature . . . is the possibility that governance crises such as corruption or protecting human rights may be more important than economic concerns" [for example, see Evans and Whitefield 1995].

The economic voting literature presents some key processes from which I draw my second hypothesis. First, citizens care about the state of the economy in their assessments of the president (Mueller 1973; Erikson et al. 2012). We also know that the multidimensional nature of attitude formation and stability makes it likely that the issue of criminal violence competes for voters' limited attention, especially in contexts of high violence (Singer 2011). In good economic times, citizens are more likely to shift their attention to non-economic issues, and they are likely to shift their attention away from the economy during governance crises involving insecurity, corruption, human rights violations, or terrorism (Bali 2007; Kibris 2011; Singer 2011). Therefore, I would expect that in periods of economic downturn, the negative effect of insecurity on approval will decrease:

- Hypothesis 2: the effects of criminal violence on the level of executive approval will be conditional on the shape of the economy at a given time
    - Hypothesis 2a: as unemployment increases, and the economy diverts attention from crime, the negative effect of insecurity on approval will decrease.
    - Hypothesis 2b: similarly, as inflation increases the negative effect of crimes on approval will decrease

Some studies of executive approval focus on the micro-level rather than aggregate trends in public opinion. These works have enabled more contextualized understandings of changes in presidential approval, and have helped to corroborate findings at the aggregate level (Gronke and Newman 2003; Carlin et al. 2012). An aggregate-level approach, in contrast, extends basic models built around individual-level arguments to additional case studies. As Carlin et al. (2012) suggest, aggregate-level studies generally bear out micro-level theoretical expectations, even in countries with very different socioeconomic

backgrounds and democratic histories, including Peru (Arce 2003; Morgan 2003), Uruguay (Luna 2002) and in Central America (Cuzan and Bundrick 1997). These studies assume that as the environment and circumstances of individuals change, their level of support for the president will also change. Aggregation accentuates the orderly movement of macro-electorates over time, as illustrated by Erikson, MacKuen and Stimson (2002:21):

> One can have an electorate in which large numbers of citizens act as if at random and other large numbers have unchanging loyalties that commit them to the same side for a lifetime and still observe in the aggregate response an orderly response to real political events. When we aggregate over time, those who act as if at random cancel out. Those who act always the same produce no variance. The aggregate "signal" arises almost wholly from those who are orderly in their behavior.

1.c. Regional violence, issue salience, and executive performance on security

Scholars have long debated the relationship between issue salience, attitudes towards the president, and ideology at the individual level. There are disagreements among voting behavior scholars regarding the effect of issue preferences on how the public assesses candidates and establishes political attitudes. On the one hand, Ellis and Stimson (2012) find that in the U.S. voters choose among issue preferences somewhat randomly, do not understand the implications of issue positions for actual policy outcomes, and make up their ideological identity based on symbolic factors.[14] Studies of public opinion in the U.S. often agree that party identification is the single strongest influence on how the public assesses candidates and determines political attitudes (Bartels 2002; Green, Palmquist and Schickler 2002; Lewis-Beck 2009). For those who identify with a party, partisan cues often take the form of well-thought-out issue positions, and attention to news and campaigns, and these

[14]An example of this is those who identify as Republicans because of the clear religious connotations versus any real conservative issue positions (Ellis and Stimson 2012, in Thomas 2016:7).

partisans are seen as automatically accepting messages coming from their party while rejecting any messages from other parties (Zaller 1996; Goren, Federico and Kittilson 2009).

On the other hand, the importance of issue salience should not be disregarded so easily (Abramowitz and Saunders 1998). Carsey and Layman (2006:464-5) suggest that issue attitudes and partisanship can cause changes in each other, but the pattern of influence varies systematically: "the degree to which each orientation exerts a causal influence varies systematically as a function of the importance individuals attach to an issue and the degree to which they are aware of partisan differences on the issue." In particular, the authors find that issue-based change in partisanship should occur among those who are aware of party differences on an issue and find that issue to be salient (Carsey and Layman 2006:465).[15] Similarly, evidence also suggests that issues vary in salience over time (Converse 1964), and that for an issue to influence approval, the issue must be salient, and people must evaluate the president in terms of his performance regarding it (Bernstein 1991; Brody 1991; Edwards 1991; Edwards, Mitchell and Welch 1995:13).

Given the geographical dimension of crime, and the fact that criminal violence has detrimental effects on the economy and quality of life of citizens, we can assume then that in areas disproportionately affected by crime security issues will be of high salience. In other words, we would expect that individuals in high-violence regions will attach more weight to a president's performance on security than other citizens in their assessments of the president, as these issues become more and more politicized. This is particularly true in Mexico during the 2006 presidential election, as the candidates of the main political parties—Felipe Calderon (PAN), Andres M. Lopez Obrador (PRD) and Roberto Madrazo (PRI)—

[15]In turn, Carsey and Layman (2006) find that individuals who are aware of party differences but do not attach importance to the issue evidence party-based—instead of issue-based—-issue change.

assumed distinctive and identifiable positions on crime during the campaign, increasing the ability of citizens to base their opinions of the candidates on issue-based considerations. The clearest contrast between these positions was between Calderon and Lopez Obrador, the two leading candidates. Calderon campaigned on a "iron fist" position, presenting himself as tough enough to crack down on crime, and emphasizing restoring the rule of law in the country. Lopez Obrador, in contrast, focused on the need to tackle poverty and enhance social welfare to solve crime (Aziz Nassif 2007:26).

While the hypothesis that party identification drives issue preferences might apply in certain contexts, we know that specific issues can shape partisanship, especially if these issues are salient and if the candidates assume distinctive positions on crime. In Mexico, where violent crime is among the most salient issues,[16] individuals should pay closer attention to security issues in their assessments of their president. In sum, in high-violence regions we would expect that an individual's issue preference regarding crime might weigh more heavily in his assessment of the president than they do among U.S. voters.

An analysis at the micro-level allows for a more fine-tuned examination of the factors that account for variations in approval. In contrast with the macro-level approach and its focus on electorates, a micro-level perspective looks at individuals who are assumed to be capable of complex, rational judgments given the limited information available (Popkin 1994; Lupia and McCubbins 1998; Erikson 2009). Indeed, individual-level studies can help us isolate variables that shape approval, which aggregate-level studies cannot take into account: for instance, micro-level theorizing highlights significant heterogeneity within the public, which raises the possibility that variables have different effects on different parts of

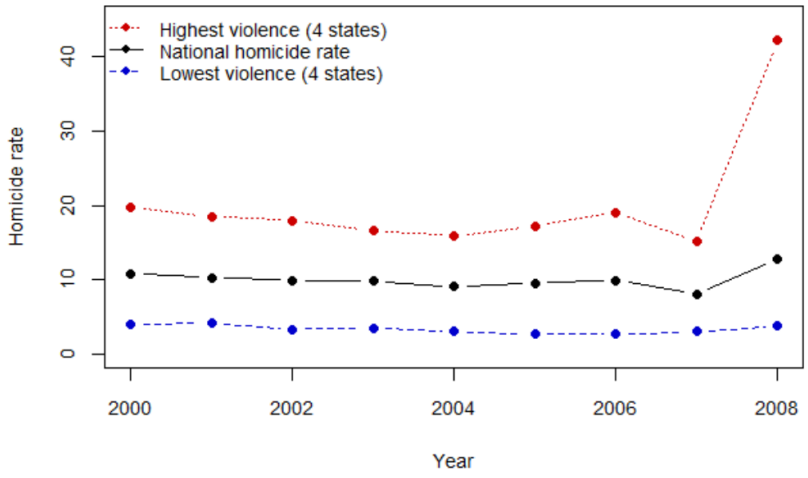
[16]This is evident in all *Latinobarometro* (2015) surveys for Mexico since 2005, in which the issue of public security (*delincuencia y seguridad pública*) consistently ranks as the most important issue in the country.

the population. Individual-level studies can also help to isolate stability and change among the public, focusing on *who* changes and *why* (Gronke and Newman 2003:506).

Micro-level studies that examine group differences can point to the sources of those differences, and how these differences relate to the realities that various groups experience in a society (Newman 2003; Erikson 2009). Scholars have evaluated whether individuals differ in the weight they assign to economic fluctuations, directly linking their pocketbooks to the national economy (Singer 2011:288). For instance, Weatherford (1983) and Echegaray (2005) argue that poor voters should have greater incentives to focus on the state of their personal finances than wealthier ones.

When it comes to criminal violence, group differences can result from differences in the weights that each group attaches to variables such as a president's perceived performance on public security (for example, see Gilens 1988; Newman 2003). Given that crime has an inherent geographical quality there are good theoretical reasons to study how criminal violence can become a salient non-economic issue at the individual level. Evidently, crime does not directly affect the whole population in the same way at the same time. Some citizens consider public security to be more politically relevant than others, and they will likely evaluate the president according to the importance they attach to these issues (Fournier et al. 2003; Singer 2011). In contrast with high inflation or economic downturn—which have society-wide effects—the direct effects of criminal violence are generally concentrated in specific regions, cities, and neighborhoods (Romero et al. 2013). Thus, we can expect those who live in contexts characterized by very high violence to be more likely to evaluate their presidents with this in mind.

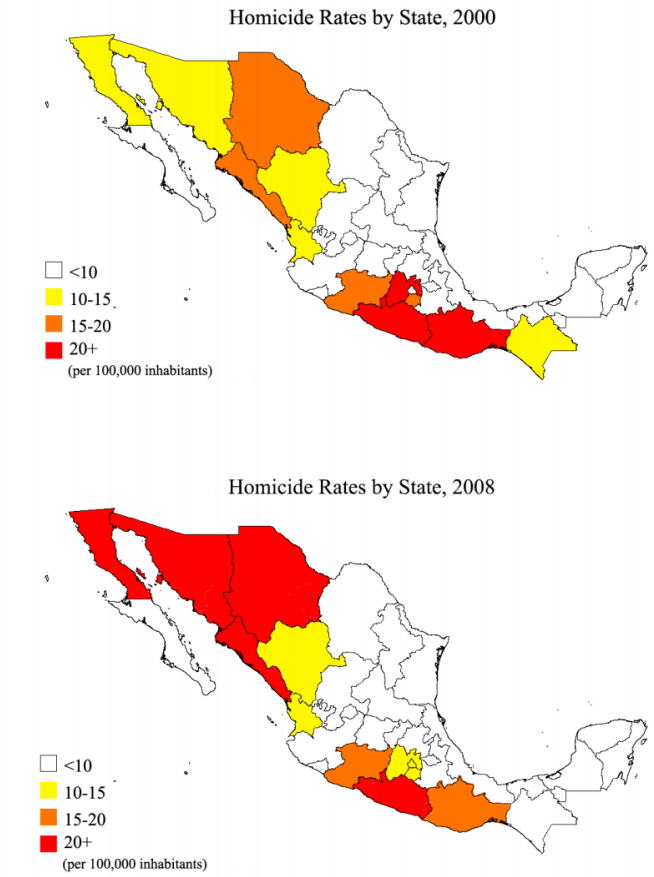
Figure 1: Homicide rates in high- and low- violence states in Mexico, 2000-2008



To illustrate the relevance of the geographic dimension of crime in Mexico, Figure 1 shows the average homicide rates of the four least violent and the four most violent states from 2000 to 2008. The four least violent states include Aguascalientes, Hidalgo, Queretaro and Yucatan, whereas the most violent for that period are Baja California, Chihuahua, Guerrero and Sinaloa.[17] From the plot, we can see that states with the highest levels of

[17]Figure 1 plots the highest- and lowest-violence states, which receive a score of nine and one respectively in my scale—see Appendix 1 for more details.

Figure 2: Maps of homicide rates by state in Mexico, 2000 and 2008



violence consistently have homicide rates about twice as high as the national average, whereas low-violence states have homicide rates that are comparable to that of developed countries in Western Europe. The sharp increase in homicide rates for high-violence states from 2007 can be attributed to a surge in violence in areas bordering the U.S. and in states such as Michoacán, Sinaloa and Durango. The main agents of violence in these states are criminal organizations, especially those involved in drug trafficking.[18] These states are also characterized by a weak presence of the state: policing is often absent, the criminal justice system is ineffective, and communities lack basic health and education services.

[18]The violence produced by drug-trafficking organizations is often fueled by drug-trafficking related activities, which lead to conflict among drug cartels and between cartels and the state (Ley 2014:14).

Even though we can discern a stable pattern in the average homicide rates for all states before 2007, this stability disguises notable variations within the groups. Among those with the highest homicide rates, for example, states such as Guerrero and Oaxaca are characterized by rural forms of violence.[19] Historically, a large proportion of homicides in these states predominantly comes in the form of extra-judicial killings, domestic violence, and executions associated with land disputes (Taylor, 1979, Escalante 2009). Rural violence is generally not associated with organized criminal organizations, and it predominantly takes place in municipalities with less than 10,000 inhabitants (Escalante 2009). As it is evident in Figure 2, states with predominantly rural forms of violence—mainly located in southern Mexico, around the Tierra Caliente region—have seen homicide rates drop dramatically from 2000 to 2008 and stabilize after that. On average, homicide rates in these states dropped from over 30 homicides per 100,000 inhabitants in 2000 to about 15 in 2008.[20]

To summarize, criminal violence has been highly concentrated in a few Mexican states over the last decades—particularly in rural states as well as those near the US border. If public security issues are more salient for citizens in high-violence regions, then public security can stand on its own as a potential non-economic issue on which citizens might base their evaluations of the president. In this context, an individual's perception of crime and her attitudes towards the president's performance on security will be reflected in that person's overall assessment of the president. From this, we can hypothesize that in states with high level of criminal violence citizens will pay closer attention to the way politicians are handling

[19]About a quarter of the total homicides in Mexico from the 1980s until the turn of the century occurred in one of these three states, in mostly rural municipalities.

[20]To illustrate the decrease in rural forms of violence, in 2000 Oaxaca—a state historically characterized by high levels of rural violence—recorded 54 homicides per 100,000 population, the highest murder rate of any state that year. By 2008, the rate had dropped significantly (to 17.8) but remained above the national average.

public security, and they will likely base their evaluations of the executive with this in mind. This analysis translates to the following hypotheses:

- Hypothesis 3: citizens in high violence states are more likely to pay closer attention to the way the president is handling public security, and this will weigh more heavily in their assessment of the president

The underlying assumption here is that people attach varying degrees of importance to the issue of security depending on the levels of violence in their states. Ideally, we would evaluate the effects of high violence contexts on approval at the municipality or even neighborhood levels, as this would allow us to more precisely measure the extent to which the violence in a community shapes public perceptions of politicians. Unfortunately, however, the national survey data obtained for this analysis does not contain data on the municipality or neighborhood of residence of participants.

PART 2: METHODS, DATA AND MODELS

To test Hypotheses 1, 2.a and 2.b, I use aggregate public opinion data in Mexico from 2003 to 2015 (Carlin et al. 2016).[21] To test hypotheses 3.a and 3.b I use individual survey data obtained from the *Banco de Información para la Investigación Aplicada en Ciencias Sociales* (BIIACS) and designed by the *Centro de Investigación y Docencia Económicas* (CIDE) in Mexico. The two surveys were conducted in November 2007 and October 2008 during the presidency of Felipe Calderon (2006-2012),[22] who made the issue of public security a central element of his campaign (Norzagaray López 2010; Bravo Regidor 2011) and his presidency (Ley 2014). Calderon declared "war on crime" on drug cartels soon after assuming power in 2006 (Parish Flannery 2013), increasing active federal government intervention on security. In consequence, criminal violence skyrocketed: Mexico went from 10 homicides per 100,000 inhabitants at the beginning of Calderon's term to about 30 per 100,000 at the peak of violence in the summer of 2011 (Magaloni et al. 2013; Ley 2014).

2.a. Aggregate-level public opinion models

2.a.(i). Dependent variable—executive approval

Studying the relationship between approval, security and the economy in Latin America has been difficult since most of the surveys that deal with approval are inconsistent

[21]The period under study corresponds to the rise of criminal violence in several regions in Mexico. Inter-cartel war flared up at the turn of the century, and competition over traffic routes into the U.S. became more intense after Calderon declared a war against drugs and cartels in 2006 (Grillo 2011; Ley 2014).

[22]The sample frame for these surveys selected households through a multi-stage stratified probabilistic process. Household interviews lasted approximately 40 minutes each and were completed by an adult member, randomly selected, with a similar proportion of male and female interviewees (BIIACS 2007, 2008).

and often unavailable across time. This, along with differences in questionnaire design, data collection process, length of time series, sampling frame and missing data, have frustrated attempts to understand patterns of approval (Carlin et al. 2014:115). Following Erikson, MacKuen and Stimson's (2002) empirical strategy, Carlin, Hartlyn, Love and Martinez-Gallardo (2016) have put together the Executive Approval Database (EAD), which combines thousands of available approval surveys for Latin American countries into "smoothed" monthly time series that are comparable across time and countries.[23] I derive my dependent variable from the EAD from January 2003 to June 2015, and it measures the percentage of people who say they "approve" of the way the president is handling the job.

Approval moves as a stationary distributed lag time series, which is found to be a well-behaved time-series.[24] As a distributed lag process, I model current approval as a function of approval from the previous month ($t - 1$) (Carlin and Hunt 2015:82). The theory behind the models is that the level of support for the president will remain constant unless a significant political or economic change causes the level of support to rise or fall. That is, last month's level of support for the president predicts this month's level. If the economy is doing well, support for the president should increase; if not, we would expect people to express their discontent in lower levels of support (Erikson et al. 2002). Therefore, my models studying approval at the aggregate-level in Mexico include a lagged version of executive approval (Approval at t − 1) as an independent variable.

[23]Their approach relies on country-specific measurement models derived from Erikson et al.'s (2002) dyad-ratios algorithm. The measure of approval for each country in the EAD uses all such dyadic ratios within a given series to estimate presidential approval values at monthly intervals. Exponential smoothing on the series "sharpens the estimates by removing random fluctuation due to sampling error." (Carlin et al. 2014b:115). This method assumes that to the extent that a given data time series is a valid indicator of presidential approval, the ratio of any two values within the series is a relative indicator of presidential approval (Carlin et al. 2014b, 115).

[24]Erikson et al. (2002:35) argue that as a stationary series, approval can be moved by the events and conditions of a presidency, but tends to return to a stable mean as these effects recede in time.

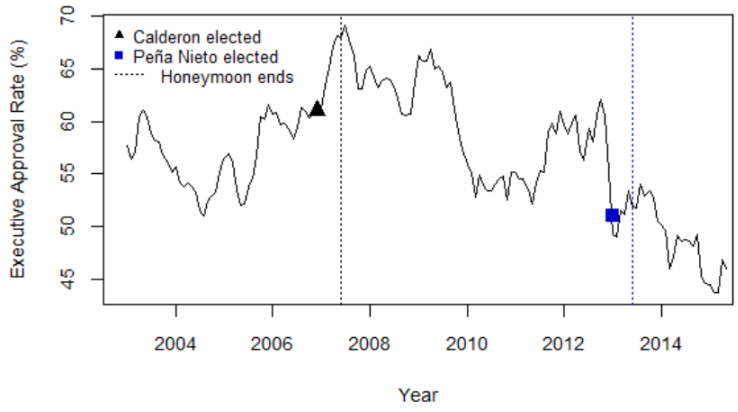
Table 1: Descriptive statistics for dependent variable in the aggregate-level model

Variable	Min.	Max.	Mean	SD
Presidential Approval	43.62	69.11	56.99	5.78

* Average rate of respondents who "approve" the president's job.
Time period covered—Jan 2003 - Jun 2015, monthly data

The EAD series measure presidential approval (*aprueba/desaprueba*), favorability (*favorable/desfavorable*), and ratings (*bien, regular, mal*) of the president's management (*gestión*), job (*trabajo*), performance (*desempeño*), and image (*imagen*) (Carlin et al. 2014a:446). In this study I use the marginal of the positive response, which is a useful method to consistently estimate approval if the response choice in the surveys is dichotomous, trichotomous (with a "regular" or neutral middle category), and even if it has four response choices (where the marginal includes all positive responses).[25]

Figure 3: Executive approval rates and honeymoons in Mexico, 2003-2015



Moreover, as Figure 3 and Table 1 show, executive approval rates vary widely in the period covered, from a low of 43.64% for Enrique Peña Nieto in March 2015, to a high of

[25]As Erikson et al. (2002:43) explain, the marginal total is "all but uninterpretable in isolation," but this is not an issue when we study opinion change over time–"as part of a series ordered in time, the simple [marginal] is a datum. If it is higher or lower than readings before and after or even if it is the same, it says something about the time in which the survey was taken."

69.11% for Felipe Calderon in July 2007. We can also identify from Figure 3 that there is substantial variation among and within presidential terms, and that the approval rate of the three presidents covered in the 2003-2015 period is high (mean= 56.99%, s.d.= 5.78) even relative to other Latin American countries.

2.a.(ii). Independent and control variables

Table 2: Codes and descriptive statistics for continuous independent variables

Variable	Min	Max	Mean	SD
Homicides (x100)	5.08	26.01	14.22	5.92
Unemployment (%)	2.77	6.42	4.34	0.82
Inflation (%)	-0.74	1.14	0.33	0.35

Time period covered—Jan 2003 - Jun 2015, monthly data

In the aggregate model, I measure criminal violence using the number of homicides as my key explanatory variable of interest.[26] From Table 2 we can observe that the number of homicides in this period shows wide variation. There were 508 recorded homicides in February 2007 (the lowest in the time covered), shortly after Calderon's drug on war began. In May 2011—at the height of the war on drugs—there were 2601 recorded homicides, as violence intensified between government forces and drug cartels, as well as between cartels. Table 2 also shows that the number of monthly homicides in this period is relatively high (mean= 14.22%) and with high variation (s.d.= 5.92).

Regarding the relationship between approval and the economy, there has been much debate in the economic voting literature about which economic indicators citizens are most likely to feel, and which changes in the economy will most consistently affect their vote (Carlin et al. 2014a:117). In comparative analysis, the researcher has to devise appropriate

[26]Of all violent crimes, homicide can attract large and heterogeneous audiences, and it is generally unanimously condemned even by those who favor the death penalty (Piccato 2008:61).

measures that equate economic conditions across countries and time. Scholars have theorized that approval varies systematically with inflation (Johnson and Schwindt-Bayer 2009; Powell and Whitten 1999), and unemployment (Cuzan and Bundrick 1997; Carlin et al. 2014a; Carlin and Hunt 2015). Here I operationalize economic conditions using indicators for unemployment and inflation with monthly data from the *Instituto Nacional de Estadística y Geografía* (INEGI) in Mexico.

Unemployment indicates the share of the labor force that is without work but seeking employment. Inflation reflects the annual percentage change in the cost of acquiring goods and services to the average consumer, and it is measured by changes in the consumer price index (CPI). Unemployment and inflation are ideal indicators of the economic conditions of Mexico because data is available for the entire period covered in this study (from January 2003 to June 2015). From Table 2 we can see that unemployment rates vary widely during the 13 year period in the dataset, from a low of 2.77% in December 2005—during the presidency of Vicente Fox—to a high of 6.42% in September 2009—as the country faced "the worst year of economic downturn" since the offset of the Great Depression.[27] However, we should note that inflation rates remained relatively stable (s.d.= 0.35) and low (mean= 0.33%) during this time, even during the economic crisis. Given that there is little variation in this explanatory variable we will likely observe null effects of inflation on approval in our models. Similarly, it is likely that our interaction term in Hypothesis 2.b. will yield null results.

[27]See NACLA (July/August 2010), "Mexico's Economic Collapse." Accessed at: http://nacla.org/news/mexico%E2%80%99s-economic-collapse

Table 3: Count statistics for dummy variable *honeymoon*

Variable	Coding	Categories	Count (months)
Honeymoons	*honeymoon*=1	Honeymoon	12
	honeymoon=0	No honeymoon	137
		Total	155

Moreover, research on executive approval in the US finds that presidents generally go through a "honeymoon" period, with initially higher than average approval rates that decline over time.[28] To account for the effect of honeymoons, the model includes a dummy variable (see Table 3) to denote the first six months during a president's term where she experiences higher rates of political support. In total, there were a number of 12 honeymoon months in this sample, six months for both Calderon and Peña Nieto's terms. For more information on data access and coding decisions for all the variables in the aggregate-level model see Appendix 3.

2.a.(iii). Statistical model

Similar to the approach of other scholars (e.g., see Erikson, Stimson and MacKuen 2002; and more recently Carlin and Hunt 2015), I model monthly time series of approval as a function of the lag Approval[29] and of current values of the independent variables of interest. According to Carlin and Hunt (2015), a distributed lag model requires us to include only current values of the explanatory variables, given that the lagged values of the dependent variable capture the effects of the independent variables in past months. The coefficients reported, therefore, indicate the effects of current values of the economic variables on current

[28]Some theories for why the honeymoon period erodes over time include the fact that voters might become "disillusioned" as the president's promises go unfulfilled (Stimson 1991); and, as Brody's (1991) "elite leadership" theory puts forward, "a president's honeymoon popularity represents an artificially high starting point at the outset, rather than a natural base of support." It is not surprising that presidents start out with "an aura of goodwill" that is even shared by supporters of the defeated opponent (Erikson et al. 2002:36).
[29] At month *t – 1*.

(time t) values of Approval while controlling for lagged ($t - 1$) Approval (Carlin and Hunt 2015:82). The model controls for a six-month honeymoon at the beginning of each presidential term covered (Calderon and Peña Nieto) to account for the boost in popularity presidents get at the beginning of their mandate.

I test the relationship between criminal violence and executive approval (Hypothesis 1) using a simple distributed lag model (Model 1), in which I control for the economic indicators of interest as well as honeymoons. This model also includes the interactions *Homicides ∗ Inflation* and *Homicides ∗ Unemployment*, which allow us to test the claim that the effects of homicides on approval are conditional on the shape of the economy at a given time (Hypotheses 2a and 2b). This model is expressed as follows:

Model 1: $Approval_t = \alpha + Approval_{(t-1)}\beta_1 + Homicide_t\beta_2 + Unemployment_t\beta_3 + Inflation_t\beta_4 + Honeymoon_t\beta_5 + Homicides{*}Unempl_t\beta_6 + Homicides * Inflation_t\beta_7 + \varepsilon$

2.b. Individual-level public opinion models

2.b.(i). Dependent variable—executive approval

The dependent variable in the individual-level analysis—also executive approval—is drawn from the BIIACS national surveys. The first field survey from which this study draws was conducted in all Mexican states on November 30, 2007, and it has a sample size of 18812. The second BIIACS survey was conducted on October 24, 2008, and has a sample size of 7200. Approval is derived from responses to the survey question "To what extent do you approve of the way in which President Calderon is doing his job." Approval, in this case, is measured using one of five categories, which range from strongly approves (*aprueba mucho*) to strongly disapproves (*desaprueba mucho*).

Table 4: Count statistics for categorical dependent variable in individual-level model

		BIIACS 11/2007	BIIACS 10/2008
Variable	Categories	Count (%)	Count (%)
Executive approval	(1) Strongly disapproves	3.9	10.1
	(2) Somewhat disapproves	19.5	12.5
	(3) Neither approves nor disapproves	9.7	21.3
	(4) Somewhat approves	45.2	40.1
	(5) Strongly approves	16.6	12.6
	(NA) No answer	5.1	3.5
	Total	18812 (100)	7200 (100)

Note that the 2007 BIIACS survey does not cover six states nor the Distrito Federal.[30] Of these, two states—Guerrero and Michoacán—stand out in terms of criminal violence, as their homicide rate during the 2000-2008 period is more than double the national homicide rate. The remaining states not covered by this survey had homicide rates below (e.g., Campeche, Baja California Sur) the national average during this period.

2.b.(ii). Independent and control variables

The first key independent variable is regional violence, a categorical variable that captures the level of criminal violence by region in Mexico.[31] Two other independent variables of interest include the degree to which respondents approve of Calderon's work on security (*evalseg*) and on the economy (*evalecon*).[32] In Model 3, these variables are used to estimate the degree to which a citizen's perceptions of the executive's work on security and the economy affect her overall evaluation of the president.

[30]See Appendix 2 for more information on the states included in each of the BIIACS surveys as well as the number of cases in each state.

[31]For more information about the coding of this variable as well as the specific states included in each category (ranging from 1—lowest violence states—to 9—highest violence states), see Appendix 1.

[32]These variables are obtained from the survey questions "Do you approve or disapprove of the work of Felipe Calderon on his handling of security?" (*evalseg*) and "Do you approve or disapprove of the work of Felipe Calderon on his handling of the economy?" (*evalecon*). Coding details in Table Appendix 3.

Table 5: Count statistics for independent variables in individual-level model

		BIIACS 11/2007	BIIACS 10/2008
Variable	Categories	Count (%)	Count (%)
Regional violence	(1) Lowest level of violence	16.9	7.1
	(2)	16.8	16.7
	(3)	11.5	10.2
	(4)	12.6	9.7
	(5)	12.7	8.8
	(6)	8.4	24.5
	(7)	4.2	4.1
	(8)	4.2	7.1
	(9) Highest level of violence	12.7	12.0
Approves of Calderon's work on security	(1) Strongly disapproves	4.4	16.0
	(2) Somewhat disapproves	15.8	25.7
	(3) Neither approves/disapproves	22.0	19.9
	(4) Somewhat approves	42.4	31.0
	(5) Strongly approves	12.2	4.1
Approves of Calderon's work on the economy	(1) Strongly disapproves	3.4	15.6
	(2) Somewhat disapproves	14.5	24.4
	(3) Neither approves/disapproves	21.3	20.1
	(4) Somewhat approves	44.6	31.3
	(5) Strongly approves	11.9	7.2

Table 6: Count and summary statistics for control variables in individual-level model

		BIIACS 11/2007	BIIACS 10/2008
Variable	Categories	Count (%)	Count (%)
Party ID	(1) Identifies with PAN	31.7	26.7
	(0) Identifies with other party	68.3	70.2
Gender	(1) Female	50.9	50.8
	(0) Male	49.1	49.2
Education	(1) None	7.7	6.4
	(2) Elementary	36.0	30.3
	(3) Middle school	29.5	28.7
	(4) High school	17.8	22.1
	(5) University or more	8.1	12.2

In this model, I control for whether respondents share party identification with the president using the dummy variable Party ID (*partyID* of 1 = respondent supports the PAN—*Partido de Acción Nacional*). The model also controls for the gender, age and level of

education of participants. Additional information on data access and the coding of variables in the individual-level models see Appendix 3.

2.b.(iii). Statistical model

$$y_i = \begin{cases} 1 \text{ (strongly disapproves)}, & \text{if } z_i < 0 \\ 2 \text{ (somewhat disapproves)}, & \text{if } z_i \in (0, c_2) \\ 3 \text{ (neither approves/disapproves)}, & \text{if } z_i \in (c_2, c_3) \\ 4 \text{ (somewhat approves)}, & \text{if } z_i \in (c_3, c_4) \\ 5 \text{ (strongly approves)}, & \text{if } z_i > (c_4) \end{cases}$$

$$z_i = X_i\beta + \varepsilon_i$$

The ordered categorical model (Model 2) can be understood by generalizing the latent variable formulation to *K* categories, where y is the unobserved dependent variable (*approval*), *x* is a vector of independent and control variables, β an unknown parameter vector, *c* represents the thresholds or cut points, and ε the error term. The objective of Model 2, then, is to predict the likelihood that y^* is within one of five categories of approval, ranging from *Strongly Disapproves* (Category 1) to Strongly Approves (Category 5). This ordered logit model allows us to derive a likelihood function and maximum likelihood estimates of β for the explanatory variables of interest. From this model, we obtain odds ratios for each of the explanatory variables of interest, as well as a marginal effects plot for the interaction term *regviolence*evalseg.*

PART 3: RESULTS AND ANALYSIS

3.a. Results of the aggregate-level model

Table 7: Autoregressive distributed lag model

	Model 1
(Intercept)	12.17**
	(3.69)
$\text{Approval}_{(t-1)}$	0.92***
	(0.03)
Homicides (*100)	−0.51*
	(0.24)
Unemployment	−1.71*
	(0.75)
Inflation	−0.45
	(1.20)
Honeymoon	0.12
	(0.56)
Homicides*Unemployment	0.11*
	(0.05)
Homicides*Inflation	0.03
	(0.07)
R^2	0.90
Adj. R^2	0.90
Num. obs.	155

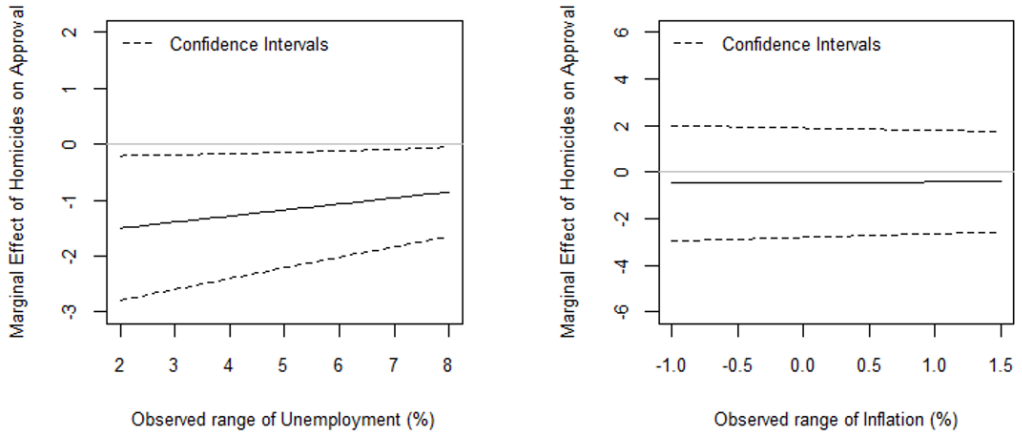
$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$

Note: Robust standard errors reported in parentheses.

The results for the distributed lag model are reported in Table 7. In line with my theoretical expectations (Hypothesis 1), the results show that the number of homicides has a negative and significant effect on approval—all else equal, an increase in 100 homicides in one month will translate to a loss of 0.51% in approval for the president, on average. The negative and significant effect of the economic variable unemployment also follows our expectations: for an increase of one percentage point in *unemployment* we would expect, on average, a decrease of 1.71% in the approval of the president at a given time.

The findings suggest that neither inflation nor honeymoon has a significant effect on approval. With regards to inflation, this could be attributed to the fact that inflation in Mexico showed little variation (mean= 0.33%; s.d.= 0.35) in the time covered, even during the financial crisis in 2009. Similarly, the null effects of honeymoon might come from insufficient honeymoon months in the time series, which only covered the beginning of two presidential terms—only twelve months in a time series with a length of 155.

Figure 4: Marginal effects plots: *Homicides* on *Approval* across the observed ranges of a) *Unemployment* and b) *Inflation*



Model 1 also suggests that there is a significant interactive effect between the variables *unemployment* and *homicides* on approval. To better understand the magnitude and direction of the of this interaction Figure 4 plots the marginal effects of homicides on approval across all observed values of *unemployment* and *inflation*. The graph on the left shows that when *unemployment* is high, the negative effect of *homicides* on approval will be weak compared to lower values of *unemployment*. This is statistically different from zero across all observed values of *unemployment*, but the negative effect is stronger when *unemployment* is low. This finding supports hypothesis 2.a: On average, an increase in

criminal violence has a negative and significant effect on the approval of presidents when *unemployment* is low. However, we do not find support for Hypothesis 2.b. on the interactive effect between *inflation* and *homicides*.

A key shortcoming with Model 1, which is a challenge faced by macro-level analyses of public opinion in general, is that exclusive reliance on aggregate data—such as homicides or unemployment rates—takes us only part of the way toward answering questions about how individuals react to changing circumstances, or why people evaluate the president as they do. As Edwards, Mitchell and Welch (1995:109) explain, aggregate level data do not provide information about individual behavior, and findings of covariation in this research often raises the question of "*who* is responding and for *what* reasons?" For example, if a drop in presidential approval coincides with an increase in the homicide rates, is this the result of increased discontent among those directly affected by criminal violence, those worried about crime more generally, or those not directly affected by crime but who feel the president is not doing enough to combat crime in places most affected?

3.b. Results of the individual-level model

Table 8: Odds ratios for effect of independent variables on *approval*

	Dep. variable: *Approval*	
	Survey 1	Survey 2
	11/2007	10/2008
Level of violence	0.958**	0.993***
	(0.019)	(0.026)
Perceived performance - Security	1.396***	1.793***
	(0.029)	(0.049)
Perceived performance - Economy	2.156***	1.379***
	(0.020)	(0.023)
Party ID	1.949***	2.499***
	(0.032)	(0.056)
Gender	1.094***	1.163***
	(0.029)	(0.046)
Age	1.001	0.997
	(0.001)	(0.002)
Education	1.023	0.929***
	(0.015)	(0.023)
Perc perf sec* Lev of violence	1.003	1.012
Level of violence	(0.005)	(0.008)
Observations	17,002	6,588
Note:	*p<0.1; **p<0.05; ***p<0.01	

The results in Table 8 correspond to the odds ratios from the ordered logit models for the effect of our independent variables on approval in the two BIIACS surveys.[33] As expected, more positive perceptions of a president's work on security or the economy will, on average, translate to a higher likelihood that a citizen approves of the president. More

[33]The table reports the odds ratios as these are easier to interpret. See Appendix 4 for the coefficients for the ordered logit models.

specifically, these results suggest that keeping all other variables constant, when a person's perception of the president's performance on security increases by one category, she will be 1.4 (in 2007) and 1.8 (in 2008) times more likely to be in a higher category of approval. Similarly, an increase in perceptions of the president's performance on the economy will make someone, on average, 2.156 (in 2007) or 1.379 (in 2008) times more likely to be in a higher category of *approval*. These findings support the broader claim that the salience of criminal violence is not a constant but varies across individuals in different states.

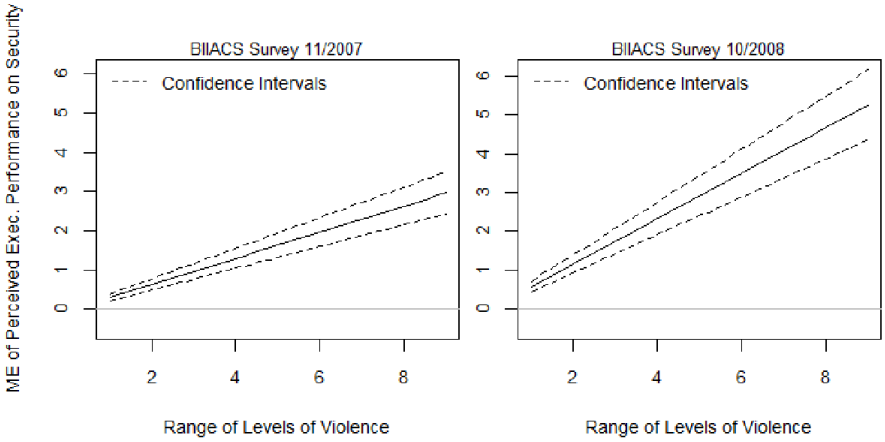
Interestingly, the effects of perceptions of a president's economic performance on approval are considerably stronger in the 2007 survey than in 2008, while the effects of the perceptions of security performance on approval are weaker in 2007. This could be attributed to the fact that in October 2008—when Survey 2 was conducted—Calderon's war on drugs had turned into a bloody and intense conflict, which helped create a "culture of fear" among the public (Escalante 2009; Hernandez 2012; Ley 2014).[34] As Calderon's war intensified and its effects became more noticeable to the public, we could think that citizens attached more weight to the president's performance on security issues—relative to the weight attached to performance on the economy—in their evaluations of the executive.

From Table 8 we can also note that an increase in one unit in the level of violence in a person's state would make that person 4.2% (in 2007) or 0.7% (in 2008) more likely to move to a lower category in approval (e.g. from *somewhat approves* to *neither approves nor disapproves*), on average. The negative effect of regional violence on approval could be attributed to the possibility that citizens in high violence states might have higher

[34]In fact, the number of homicides almost doubled between the time both surveys were conducted—from a national average of 7 homicides per 100,000 inhabitants in November 2007 to an unprecedented homicide rate of 14.6 a year later.

expectations of their president on security issues, which they are likely to prioritize over others. If this is true, we would expect those who live in more violent regions to weigh perceived performance on security more heavily in their overall assessment of the president.

Figure 5: Marginal effects of *Perceived Performance on Security* on *Approval* across the range of *Levels of Violence*, two national surveys



To test this, Figure 5 plots the marginal effects of perceived security performance on approval across all values of regional violence for the two BIIACS surveys. These plots show that the for those in more dangerous states, perceptions of executive performance on security seem to matter more when it comes to evaluating the president's overall performance. Conversely, those in less dangerous states will weigh the executive's work on security *less* heavily in their evaluations of the president. Interestingly, for the 2008 survey we can see that the effects of security performance increase even more sharply as the region's level of violence increases. Once again, this could be attributed to the high intensity of Calderon's war on drugs when the survey was conducted; and because in high-violence states—such as Sinaloa, Guerrero and Chihuahua—the number of homicides grew dramatically by 2008.

PART 4: CONCLUSION

What are some of the factors that help us understand whether citizens approve of the work of their president? Inspired by research methods and theoretical insights from public opinion studies in the U.S. and in Latin America, this paper finds that executive approval in the Mexican context appears to be subject to similar economic forces as in the United States. In particular, my aggregate analysis provides evidence that the economy and criminal violence are both significant predictors for approval in Mexico for the 2003-2015 period. Interestingly, the results for one of my economic indicators—inflation—did not go along the theoretical expectations. This result could be attributed to the fact that there is little variation in the inflation rate during the period under examination (the highest inflation rate being 2.52% and the lowest -0.74%, with a standard deviation of 0.46). Since inflation was not a problem even during Mexico's economic crisis in 2009, this issue was not in the public discussion and, thus, it was likely not in the minds of citizens.

The results from the individual-level models corroborate the hypothesis that crime matters for executive approval, and they also provide additional insights on the way the public evaluates the president's performance on public security. As it turns out, evidence suggests that citizens in high violence contexts will weigh the issue of public security more heavily than others when it comes to evaluating the executive, and this interactive effect seems to intensify in the middle of a security crisis. It is also important to note that perceptions of the president's performance on the economy are also strong and significant predictors of their likelihood to approve of the president's work. Beyond corroborating

aggregate-level findings, the micro-level models are also helpful as they allow us to account for key factors that affect approval and which aggregate studies cannot isolate. For example, these models enable us to take political predispositions like partisanship as well as social and demographic factors—such as education, gender and age—into account in our study.

In terms of empirical contributions, this study responds to calls to "compare and bridge individual and aggregate models of approval" (Gronke and Newman 2003:506). Although studying approval at the micro-level is quite different from the aggregate, discovering that individual-level analyses corroborate the findings of macro-level studies lends credibility to the results on the effects of criminal violence on approval. On the one hand, our aggregate analysis allows us to discern the long-term effects of security on the level of executive approval across several presidential terms. On the other hand, our individual-level models highlight significant heterogeneity within the public that can be attributed to the geographical dimension of violence. This reflects the theoretical expectation that some variables—such as public perceptions of how the president handles public security—have different effects on different segments of the population.

Another advantage of micro-level data is that it allows us to examine the effect of individual perceptions of a president's performance, which might play a more significant impact on approval than actual outcomes. Edwards (1983), for instance, found that evaluations of a president's handling of economic policy had a greater impact on overall presidential approval than indicators of personal economic circumstances or evaluations of the economy's general performance. Reality could very well affect perceptions, but it is those perceptions, mediated by party, personal history, education, and any other factors that ultimately shape how someone evaluates the executive's performance in an issue area

(Jordan 1993). As Edwards et al. (1995:114) nicely put it: "Knowing how the public evaluates the president's performance on an issue provides us a more direct and theoretically meaningful measure of a person's thinking on the issue than what might be termed more objective measures of the issue."

Overall, this work contributes to a growing literature on executive approval in Latin America, as well as to efforts to explore how the public holds politicians accountable for security issues. In a nutshell, the study makes several theoretical contributions. First, it provides micro- and macro-level evidence for the effect of criminal violence on approval: in general, citizens punish presidents' approval for higher homicide rates, and they will reward them as they create more jobs. Second, the models identify similarities among the factors that shape presidential approval between the American and Mexican electorates: most notably, that the shape of the economy—in terms of unemployment rates, at least—and public *perceptions* of a president's performance on the economy also matter in approval. Third, the findings also support Matthew Singer's (2011) expectations that during good economic times citizens are more likely to shift their attention to non-economic issues such as public security. Fourth, the results highlight that in order to evaluate the effects of violence on approval we should pay close attention to the way in which different groups in the population are affected by issues of varying salience, such as criminal violence.

In terms of the quality of democracy, the repercussions of an upsurge in criminal violence and the rising popular concerns with security in Mexico, as well as in Latin America, remain to be seen. Bermeo (1999) argues that high crime played a key role in the breakdown of democracy in inter-war Europe—and this was more important than economic crises, and other variables often used to account for the rise of authoritarianism. With some

exceptions—such as the election of Otto Perez Molina in Guatemala in 2011—evidence suggests that Latin America's crime wave has not led to the breakdown of democracy in the region as predicted by Bermeo (Weyland 2003; Ley 2014 ch.4). Nevertheless, we ought to note that public support for democracy in Latin America has waned, as the region continues to struggle with high income inequality, poverty, corruption, and some of the highest homicide rates in the world (e.g., see Weyland 2003; Mainwaring and Perez-Liñán 2005; Krause 2014; Huber 2017). In this, citizens' growing concern with crime might press governments in the region to adopt a more *mano dura* approach, or to justify a shift to authoritarian practices in order to enhance security. Public frustration caused by the inability of governments to provide security could also lead to the rise of right-wing populist leaders that would campaign on the issue of insecurity and capitalize on growing public concern regarding violence.

APPENDIX 1: TABLE OF STATES IN MEXICO BY LEVEL OF VIOLENCE

States	Homicide rates						
	2004	2005	2006	2007	2008	Avg.	**Score**
Aguascalientes	2.01	2.43	2.48	3.89	5.16	3.19	**1**
Baja California	15.82	14.67	14.79	11.56	33.35	18.04	**9**
Baja California Sur	7.06	6.08	5.77	6.86	6.89	6.53	**4**
Campeche	4.40	6.46	4.04	5.79	6.36	5.41	**3**
Chiapas	5.59	6.86	12.6	9.74	5.81	8.12	**5**
Chihuahua	14.19	17.96	18.1	14.37	76.31	28.19	**9**
Coahuila	4.83	5.65	4.09	4.31	6.73	5.12	**3**
Colima	8.72	8.25	7.62	6.83	9.44	8.18	**5**
Distrito Federal	9.39	8.5	9.23	8.81	11.73	9.53	**6**
Durango	10.55	11.42	11.04	9.56	26.03	13.72	**7**
Estado de Mexico	13.33	15.17	12.57	9.11	10.65	12.17	**6**
Guanajuato	3.73	4.68	4.05	4.38	5.8	4.53	**2**
Guerrero	18.59	18.64	25.31	21.37	30.01	22.78	**9**
Hidalgo	3.61	3.25	2.52	3.26	2.99	3.12	**1**
Jalisco	6.03	6.28	6.74	6.06	7.71	6.56	**4**
Michoacan	13.42	17	24.25	13.66	15.69	16.80	**8**
Morelos	9.83	8.33	7.83	9.23	12.58	9.56	**6**
Nayarit	13.92	14.4	10.51	10.68	15.2	12.94	**7**
Nuevo Leon	2.57	3.01	3.88	5.97	5.26	4.14	**2**
Oaxaca	17.59	15.42	15	14.89	16.24	15.83	**8**
Puebla	7.02	5.96	6.46	6.04	6.18	6.52	**4**
Querétaro	4.27	3.11	3.53	2.19	4.26	3.48	**1**
Quintana Roo	11.23	6.01	5.53	9.5	11.29	8.71	**5**
San Luis Potosí	5.53	5.26	6.33	7.61	7.80	6.51	**4**
Sinaloa	15.04	17.4	18.03	13.47	29.57	18.70	**9**
Sonora	12.02	11.07	10.64	12.22	17.29	12.65	**7**
Tabasco	5.67	4.74	6.54	6.51	7.3	6.15	**3**
Tamaulipas	7.21	11.53	11.08	6.01	8.18	8.8	**5**
Tlaxcala	4.25	4.56	4.22	3.26	4.73	4.20	**2**
Yucatán	2.11	2.13	2.05	2.67	2.58	2.31	**1**
Veracruz	4.89	4.93	5.01	5.07	4.49	4.88	**2**
Zacatecas	6.72	5.64	5.86	5.06	6.8	6.02	**3**

Note: Scores for criminal violence range from 1 (lowest) to 9 (highest homicide level). States are scored based on their average homicide rate for the 2004-2008 period. Scores of 1 are for states with homicide rates between 2.0 and 3.5 per 100,000 inhabitants; scores of 2 are for states with rates between 3.5 and 5.0; scores of 3 for states with rates between 5.0 and 6.5, and so on.

APPENDIX 2: STATES IN THE BIIACS SURVEYS, SAMPLE SIZES

States included in the BIIACS 2007 survey and sample sizes, n=18812

State	Included?	Cases	State	Included?	Cases
Aguascalientes	Yes	800	Nayarit	No	792
Baja California	Yes	800	Nuevo León	Yes	787
Baja California Sur	No		Oaxaca	Yes	798
Campeche	No		Puebla	Yes	789
Chiapas	Yes	804	Querétaro	Yes	792
Chihuahua	Yes	791	Quintana Roo	No	
Coahuila	Yes	795	San Luis Potosí	Yes	792
Colima	Yes	797	Sinaloa	Yes	792
Durango	No		Sonora	Yes	790
Guanajuato	Yes	792	Tabasco	Yes	570
Guerrero	No		Tamaulipas	Yes	792
Hidalgo	Yes	792	Tlaxcala	Yes	792
Jalisco	Yes	790	Veracruz	Yes	789
México (EdoMex)	Yes	792	Yucatán	Yes	792
Michoacán	No		Zacatecas	Yes	792
Morelos	Yes	792	Distrito Federal	No	

'States included in the BIIACS 2008 survey and sample sizes, n=7200

State	Included?	Cases	State	Included?	Cases
Aguascalientes	Yes	78	Nayarit	Yes	60
Baja California	Yes	222	Nuevo León	Yes	282
Baja California Sur	Yes	30	Oaxaca	Yes	222
Campeche	Yes	42	Puebla	Yes	336
Chiapas	Yes	288	Querétaro	Yes	108
Chihuahua	Yes	252	Quintana Roo	Yes	78
Coahuila	Yes	150	San Luis Potosí	Yes	162
Colima	Yes	36	Sinaloa	Yes	174
Durango	Yes	78	Sonora	Yes	156
Guanajuato	Yes	348	Tabasco	Yes	126
Guerrero	Yes	216	Tamaulipas	Yes	228
Hidalgo	Yes	186	Tlaxcala	Yes	90
Jalisco	Yes	504	Veracruz	Yes	480
México (EdoMex)	Yes	930	Yucatán	Yes	138
Michoacán	Yes	288	Zacatecas	Yes	78
Morelos	Yes	126	Distrito Federal	Yes	708

APPENDIX 3: DATA ACCESS AND CODING DECISIONS

Data access and coding decisions (Macro-polity level models)

Variable	Code	Data source and coding notes
Approval	*approval*	Data obtained from the *Executive Approval Database* (EAD) (Carlin et al. 2016). The sample includes *monthly* approval data ranging from January 2003 until June 2015, for a time series of 149 months.
Homicides (total)	*homicides*	The variable measures the total number of victims of intentional homicide by month in Mexico. Original data drawn from the *Instituto Nacional de Estadística y Geografía (INEGI)*, 2008. For Models 1 and 2, the variable was divided by 100 in order to simplify the reporting and analysis of coefficient results. Data for *homicides* available for the entire time series (149 months, from January 2003 to to June 2015).
Unemployment	*unemployment*	The data was obtained from the *Instituto Nacional de Estadística y Geografía (INEGI).* Data available for all the months included in the sample. The INEGI calculates the unemployment rate by dividing the number of unemployed by the total labor force (*Población Económicamente Activa.* INEGI considers persons to be unemployed if they: a) have not worked for more than 8 hours during the month; b) were available for work, and c) have actively sought employment during the last month.
Inflation	*inflation*	Original data obtained from the INEGI. Data available for all months covered in sample. The INEGI uses the national index of consumer prices (CPI)—which is a weighted average of prices for different goods—as the measure for estimating the inflation rate in Mexico's economy.
Honeymoon (dummy)	*honeymoon*	Dummy variable coded independently. *Honeymoon = 1 denotes a honeymoon month.* Sample includes a total of 12 honeymoon months (out of 149 months in the time series) six months for each of the three presidential terms covered in the sample (Fox, Calderon and Peña-Nieto)

Data access and coding decisions (Micro-polity level model)

Variable	**Code**	**Data source and coding notes**
Approval	*approval*	Data drawn from two BIIACS household surveys, conducted on Nov 30, 2007 and Oct 24, 2008. They have sample sizes of 18812 and 7200 respectively.
Region's Violence Level	*violenlvl*	Original coding. This categorical variable is drawn from INEGI data on yearly homicide rates by state for the 2000—2008 period to construct this variable. From this, scores for criminal violence range from one (lowest) to nine (highest). States are coded based on their avg. homicide rate for the 2004-2008 period. Scores of one are for states with homicide rates between 2.0 and 3.5 per 100,000 inhabitants; scores of 2 are for states with rates between 3.5 and 5.0; scores of 3 for states with rates between 5.0 and 6.5, etc.
Approval—Security	*evalseg*	Variable drawn from the following question in the BIIACS 2007 and 2008 surveys: "Do you approve or disapprove of the work of Felipe Calderon with regards to security?" and scored using a five-level scale similar to *approval*
Approval—Economy	*evalecon*	Variable drawn from the BIIACS 2007 and 2008 surveys, in response to the question: "Do you approve or disapprove of the work of Felipe Calderon on his handling of the economy?" and scored using a five level scale similar to *approval*
Party ID	*partyID*	Party ID is a dummy variable that measures whether respondents are supporters of the political party of the incumbent president, the PAN—*Partido Acción Nacional*. Variable drawn from the question "Regardless of who you voted for in the last elections, which political party do you most identify with?" from the BIIACS 2007 and 2008 surveys. Possible answers to the question include major political parties in Mexico—e.g. the PAN, PRI and PRD—as well other parties such as *PT*, *PVEM*, *Convergencia*, *Nueva Alianza* and *Alternativa Socialdemócrata*.
Gender	*gender*	Dummy variable drawn from BIIACS 2007 and 2008 surveys, where *gender=1* is assigned to females and *gender=0* to males
Age	*age*	Drawn from BIIACS 2007 and 2008 surveys.

APPENDIX 4: RESULTS OF THE ORDERED LOGIT MODELS

Coefficients for the ordered logit models (individual-level analysis)

	Dep. variable: *Approval*	
	Survey 1	Survey 2
	11/2007	10/2008
Level of violence (*regviolence*)	−0.043**	−0.007
	(0.019)	(0.026)
Perc. Performance Sec (*approvsec*)	0.334***	0.572***
	(0.029)	(0.049)
Perc. Performance Econ (*approvecon*)	0.768***	0.319***
	(0.020)	(0.023)
Party ID (*partyID*)	0.667***	1.056***
	(0.032)	(0.057)
Gender (*gender*)	0.090***	0.149***
	(0.029)	(0.046)
Age (*age*)	0.001	−0.003
	(0.001)	(0.002)
Education (*edulvl*)	0.023	−0.074***
	(0.015)	(0.023)
Perc. Performance Sec.*	0.003	0.012
Level of violence	(0.005)	(0.008)
Observations	17,002	6,588
Note:	*p<0.1; **p<0.05; ***p<0.01	

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